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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/898,687	07/03/2001	Henry J. Pepin	1001.1458101	1767
28075	7590	12/03/2004	EXAMINER	
CROMPTON, SEAGER & TUFTE, LLC 1221 NICOLLET AVENUE SUITE 800 MINNEAPOLIS, MN 55403-2420			BUI, VY Q	
		ART UNIT	PAPER NUMBER	
		3731		

DATE MAILED: 12/03/2004

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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 09/898,687

Filing Date: July 03, 2001

Appellant(s): PEPIN, HENRY J.

**MAILED**

**DEC - 3 2004**

**GROUP 3700**

David M. Crompton  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 11/8/2004.

**(1) *Real Party in Interest***

A statement identifying the real party in interest is contained in the brief.

**(2) *Related Appeals and Interferences***

A statement identifying the related appeals and interferences, which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

**(3) *Status of Claims***

The statement of the status of the claims contained in the brief is correct, except for -- claims 1-2, 4-15 -- instead of "claims 1-2, 5-15" stand finally rejected as unpatentable over Steen et al. U.S. Patent No. 6,213,995) under 35 U.S.C. 103(a) as recited in the "Appeal Brief".

**(4) *Status of Amendments After Final***

The amendment after final rejection filed on 11/8/2004 has been entered.

**(5) *Summary of Invention***

The summary of invention contained in the brief is correct.

**(6) *Issues***

The appellant's statement of the issues in the brief is correct.

**(7) *Grouping of Claims***

The rejection of claims 1-2, 4-18 and 22-24 stand or fall together because appellant's brief does not include a statement that this grouping of claims does not stand or fall together and reasons in support thereof. See 37 CFR 1.192(c)(7).

**(8) *ClaimsAppealed***

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(9) *Prior Art of Record***

1. 6,213,995	Steen et al.	4-2001
2. 6,068,622	Sater et al.	5-2000
3.	"Electrical Conductivity of Metals", <a href="http://www.amm.com/ref/conduct">www.amm.com/ref/conduct</a> , page 1 (see attachment).	
4.	"Characteristics of Platinum and tungsten elements", <a href="http://www.scescape.net/~woods/elements">www.scescape.net/~woods/elements</a> , page 1-4 (see attachment).	

**(10) *Grounds of Rejection***

The following ground(s) of rejection as substantially presented in the previous "Final Rejection" are applicable to the appealed claims:

***Claim Rejections - 35 USC § 103***

In the previous Office actions, please see a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

1. Claims 1-2, 4-15, 19-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over STEEN et al. (6,213,995).

STEEN (Fig. 1-2) discloses a vascular catheter comprising inner layer 30, outer layer 32 and reinforced layer including at least two first wires 20 of stainless steel (col. 5, lines 20-23)

STEEN (Fig. 1-2) discloses a vascular catheter comprising inner layer 30, outer layer 32 and reinforced layer including at least two first wires 20 of stainless steel (col. 5, lines 20-23) and two smaller metal wires 44 of gold or silver or platinum (col. 5, lines 14-18) as recited in the claims.

STEEN discloses substantially all limitations in the claims, except for wire 44 of tungsten. However, it is well known in the art that tungsten has higher electrical conductivity than platinum (tungsten's electrical conductivity of 176.991 l/mohm-cm is about 1.92 times platinum's electrical conductivity of 94.34 l/mohm-cm, see a. "Characteristics of Platinum and tungsten elements", [www.scescape.net/~woods/elements](http://www.scescape.net/~woods/elements), page 1-4 as cited in the previous "Final Rejection" and b. "Electrical Conductivity of Metals", [www.amm.com/ref/](http://www.amm.com/ref/), page 1, as cited in the previous "Advisory Action"). It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute wire 44 of platinum as disclosed by Steen-995 by wire 44 of tungsten as this substitution would provide STEEN catheter of tungsten wire having a better electrical conductivity over STEEN catheter of platinum wire.

2. Claims 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over STEEN et al. (6,213,995) in view of SATER et al. (6,068,622).

As to claims 16-18, STEEN discloses substantially all limitations in the claims, except for sections of the catheter of distally decreasing stiffness and a soft distal tip. However, SATER (col. 4, paragraph 4 and col. 6, lines 58-66) discloses SATER catheter having sections of distally decreasing stiffness and soft tip 40 without reinforcing layer for easy and safe navigation of the catheter in a body lumen. In view of SATER, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide STEEN catheter the

**(11) Response to Argument**

The arguments in the "Appellant Brief" filed on 11/8/2004 under 37 C.F.R. 1.192 have been carefully considered but is ineffective to overcome the STEEN-'995 reference as indicated in the above rejection.

The Examiner's responses to the Appellant's main arguments are presented below:

1. Argument 1: "Thus, while Steen et al. do disclose platinum, no one of even ordinary in the art would be motivated to choose platinum in order to form electrically conductive wire to use as the signal transmitting elements taught by Steen et al. The Examiner should realize that patents disclosures frequently include laundry lists of possible materials. Such a list cannot necessarily be interpreted as teaching the equivalence of the materials within the list" as suggested in the second paragraph, page 12 of 19, "Appeal Brief".

The Examiner appreciates the Appellant's suggestion that **platinum** is one among other materials on the Steen-'995 **laundry list** of possible materials. However, the Examiner did not see any evidence in Steen-'995 indicating that the list of materials, including platinum, presented in Steen-'995 (lines 14-18, column 5) is just a laundry list. Therefore, the Examiner cannot conclude that the Steen-'995 list of materials mentioned above is just a laundry list as suggested by the Appellant. Further, there is no evidence in Steen-'995's reference for one of ordinary skill in the art to preclude a substitution of a less conductive metal, such as a platinum, for a better conductive metal, such as a tungsten (tungsten has a conductivity almost twice better than a platinum, please see cited references), to improve conductivity performance of the device.

2. Argument 2: "In order to establish a *prima facie* obviousness rejection, all the claim limitations must be taught or suggested by the prior art, and there must be a reasonable expectation of success, and there must be some suggestion or motivation, either in the

references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify or combine reference teachings (M.P.E.P. 2143.01 and 2145)" as asserted in second paragraph, page 11 of 19 of Appeal Brief, and "As stated .at M.P.E.P. 9 2144 (citing In re Fine, 837 F.2d 1071, 5 USPQ 2d 1596), the motivation to modify a reference must come from either a reference, reliance on scientific principle, common knowledge (emphasis added), or legal precedence" as asserted in page 14 of 19 of Appeal Brief.

The Examiner would like to bring to the Appellant's attention that from the data of metals available in "Metal Handbooks", "Engineering Material Handbooks" and from various internet websites, it is a common knowledge that conductivity of tungsten is better than that of platinum (almost twice better as evidenced by two websites mentioned in section 9 above). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify a Steen-'995 catheter having platinum wire by substituting conductive platinum wire as disclosed by Steen-'995 with a tungsten wire so that one can achieve a better conductivity performance for the modified Steen-'995 catheter.

3. Argument 3: "Therefore, one of ordinary skill in the art would not choose tungsten because tungsten is a relatively poor conductor of electricity and because tungsten is known to be relatively fragile" as argued in paragraph 2, "Appeal Brief".

Steen et al.-'995 discloses platinum as a conductive wire. On the other hand, tungsten is a well known metal commonly used in many electrical areas and in comparison to platinum, tungsten has almost twice higher electrical conductivity than that of platinum, therefore, one of ordinary skill in the art at the time of the invention would substitute a platinum wire in Steen et al.-'995 with a tungsten wire for a better performance in electrical conductivity. Further, as listed in many material handbooks, tungsten (modulus of elasticity is 344.7GPa) has higher tensile

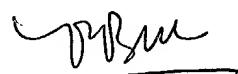
Art Unit: 3731

strength than that of platinum (modulus of elasticity is 144.8GPa), and therefore is not really fragile.

For the above reasons, it is believed that the rejections should be sustained.

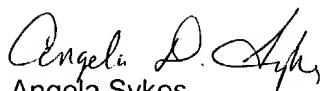
Respectfully submitted,

Vy Q. Bui  
Primary Examiner  
Art Unit 3731

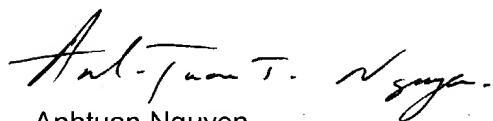


November 19, 2004

Conferees



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## Electrical Conductivity of Metals

*This page is best viewed in Netscape 2.0+ or other table-capable browsers.*

*The table originally appeared in AMM's annual Metal Statistics book.*

Metal	Relative Conductivity*	Temperature Coefficient of Resistance**	Tensile Strength (lbs./sq. in.)	Composition of Earth's Crust (% by Weight)
<i>Aluminum (2S; pure)</i>	59	0.0039	30,000	8.1
<i>Aluminum (alloys):</i>				
• <i>Soft-annealed</i>	45-50	—	—	—
• <i>Heat-treated</i>	30-45	—	—	—
<i>Brass</i>	28	0.002-0.007	70,000	—
<i>Cadmium</i>	19	0.0038	—	.0001
<i>Chromium</i>	55	—	—	.02
<i>Climax</i>	1.83	0.0007	150,000	—
<i>Cobalt</i>	16.3	0.0033	—	.002
<i>Constantin</i>	3.24	0.00001	120,000	—
<i>Copper:</i>				
<i>Hard drawn</i>	89.5	0.00382	60,000	—
• <i>Annealed</i>	100	0.00393	30,000	.007
<i>Everdur</i>	6	—	—	—
<i>Gold</i>	65	0.0034	20,000	.0000005
<i>Iron:</i>				
• <i>Pure</i>	17.7	0.005	—	5.0
• <i>Cast</i>	2-12	—	—	—
• <i>Wrought</i>	11.4	—	—	—
<i>Lead</i>	7	0.0039	3,000	.002
<i>Magnesium</i>	—	0.004	33,000	2.1
<i>Manganin</i>	3.7	0.00001	150,000	—
<i>Mercury</i>	1.66	0.00089	0	.00005
<i>Molybdenum</i>	33.2	0.004	—	.001
<i>Monel</i>	4	0.002	160,000	—
<i>Nichrome</i>	1.45	0.0004	150,000	—
<i>Nickel</i>	12-16	0.006	120,000	.008
<i>Nickel silver (18%)</i>	5.3	0.00014	150,000	—
<i>Phosphor bronze</i>	36	0.0018	25,000	—
<i>Platinum</i>	15	0.003	55,000	.0000005
<i>Silver</i>	106	0.0038	42,000	.00001
<i>Steel</i>	3-15	0.004-0.005	42,000-230,000	—
<i>Tin</i>	13	0.0042	4,000	.004
<i>Titanium</i>	5	—	50,000	.4
<i>Titanium, 6A14V</i>	5	—	130,000	—
<i>Tungsten</i>	28.9	0.0045	500,000	.007
<i>Zinc</i>	28.2	0.0037	10,000	.01

\* At 20° Celsius, based on copper as 100.

\*\* Per degree C at 20° C.

*Note: The conductivity of various metals is subject to variation according to processing and alloy composition.*



# PLATINUM

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## General

Name	Platinum	Symbol	Pt
Atomic number	78	Atomic weight	195.09
Density @ 293 K	21.45 g/cm <sup>3</sup>	Atomic volume	9.10 cm <sup>3</sup> /mol
Group	Trans. Met.	Discovered	1748

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## States

State (s, l, g)	s		
Melting point	2045.2 K	Boiling point	4443 K
Heat of fusion	19.60 kJ/mol	Heat of vaporization	510.0 kJ/mol

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## Energies

1st ionization energy	870 kJ/mole	Electronegativity	2.28
2nd ionization energy	1791 kJ/mole	Electron affinity	205.3 kJ/mole
3rd ionization energy	kJ/mole	Specific heat	0.13 J/gK
Heat atomization			565 kJ/mole atoms

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## Oxidation & Electrons

Shells	2,8,18,32,17,1	Electron configuration	[Xe] 4f <sup>14</sup> 5d <sup>9</sup> 6s <sup>1</sup>
Minimum oxidation number	0	Maximum oxidation number	6
Minimum common oxidation number	0	Maximum common oxidation number	4

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## Appearance & Characteristics

Structure	fcc: face-centered cubic	Color	silvery-white
Uses	jewelry, catalysts	Toxicity	
Hardness	4.3 mohs	Characteristics	Inert, ductile

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## Reactions

Reaction with air	none	Reaction with 6M HCl	none
Reaction with 6M HCl	none	Reaction with 15M HNO <sub>3</sub>	none
Reaction with 6M NaOH	none		

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## Other Forms

Number of isotopes	6	Hydride(s)	none
Oxide(s)	PtO <sub>2</sub>	Chloride(s)	PtCl <sub>2</sub> PtCl <sub>4</sub>

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## Radius

Ionic radius (2- ion)	pm	Ionic radius (1- ion)	pm
Atomic radius	139 pm	Ionic radius (1+ ion)	pm
Ionic radius (2+ ion)	94 pm	Ionic radius (3+ ion)	pm

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## Conductivity

Thermal conductivity	71.6 J/m-sec-deg	Electrical conductivity	94.34 1/mohm-cm
Polarizability	6.5 A <sup>3</sup>		

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## Abundance

Source	nickel ores (sulfides)	Rel. abund. solar system	0.127 log



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## General

Name	Tungsten	Symbol	W
Atomic number	74	Atomic weight	183.85
Density @ 293 K	19.3 g/cm <sup>3</sup>	Atomic volume	9.53 cm <sup>3</sup> /mol
Group	Trans. Met.	Discovered	1783

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## States

State (s, l, g)	s		
Melting point	3683.2 K	Boiling point	5773 K
Heat of fusion	35.40 kJ/mol	Heat of vaporization	824.0 kJ/mol

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## Energies

1st ionization energy	770 kJ/mole	Electronegativity	2.36
2nd ionization energy	kJ/mole	Electron affinity	78.6 kJ/mole
3rd ionization energy	kJ/mole	Specific heat	0.13 J/gK
Heat atomization	849 kJ/mole atoms		

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## Oxidation & Electrons

Shells	2,8,18,32,12,2	Electron configuration	[Xe] 4f14 5d4 6s2
Minimum oxidation number	-2	Maximum oxidation number	6
Minimum common oxidation number	0	Maximum common oxidation number	6

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## Appearance & Characteristics

Structure	bcc: body-centered cubic	Color	bluish-gray
Uses	WC drill bits, bulb wire	Toxicity	
Hardness	mohs	Characteristics	highest melting metal

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## Reactions

Reaction with air	none, w/ht => WO <sub>3</sub>	Reaction with 6M HCl	none
Reaction with 6M HCl	none	Reaction with 15M HNO <sub>3</sub>	
Reaction with 6M NaOH			

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## Other Forms

Number of isotopes	5	Hydride(s)	
Oxide(s)	WO <sub>2</sub> WO <sub>3</sub>	Chloride(s)	WCl <sub>x</sub> [x=2-6]

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## Radius

Ionic radius (2- ion)	pm	Ionic radius (1- ion)	pm
Atomic radius	139 pm	Ionic radius (1+ ion)	pm
Ionic radius (2+ ion)	pm	Ionic radius (3+ ion)	pm

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## Conductivity

Thermal conductivity	173 J/m-sec-deg	Electrical conductivity	176.991 1/mohm-cm
Polarizability	11.1 A <sup>3</sup>		

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## Abundance

Source	Scheelite,wolframite(oxide)	Rel. abund. solar system	-0.876 log